Remarks

Amendments to the Claims

Claims 23, 24, 34, and 35 are canceled. Independent claims 1 and 8 are amended to recite that the host cell is a bacterial host cell, with corresponding amendments made to dependent claims 2, 3, 8-11, and 38. Support is at page 5, lines 3-8.

Rejection of Claims 1-13, 25, 27, 36, and 38 Under 35 U.S.C. § 112 ¶ 1

Claims 1-13, 25, 27, 36, and 38 stand rejected under 35 U.S.C. 112 ¶ 1 as lacking written description. The Patent Office contends that there is inadequate support for the recitations "non-mammalian" host cell and "promoter functional in eukaryotic cells." Office Action at pages 3-4.

To advance prosecution, independent claims 1 and 8 are amended to delete the phrase "promoter functional in eukaryotic cells" and to recite that the host cells are bacterial host cells.

Please withdraw the rejection.

Rejection of Claims 1, 2, 5-8, 9, 12, 13, 25, 27, 36, and 38 Under 35 U.S.C. § 103(a)

Claims 1, 2, 5-8, 9, 12, 13, 25, 27, 36, and 38 stand rejected as obvious over Xu,[1] supported by zur Megede,[2] in view of Masschalck,[3] and Raettig.[4] Applicant respectfully traverses the rejection.

---

[1] Xu *et al.*, "Immunogenicity of an HIV-1 gag DNA vaccine carried by attenuated Shigella," Vaccine. 2003 Jan 30;21(7-8):644-8.

[2] zur Megede *et al.*, "Increased expression and immunogenicity of sequence-modified human immunodeficiency virus type 1 gag gene," J Virol. 2000 Mar;74(6):2628-3.

[3] Masschalck *et al.*, "Inactivation of gram-negative bacteria by lysozyme, denatured lysozyme, and lysozyme-derived peptides under high hydrostatic pressure," Appl Environ Microbiol. 2001 Jan;67(1):339-44.

The Examiner cites Xu as teaching attenuated *Shigella* bacteria containing a plasmid encoding an HIV antigen (Gag) and administering the bacteria to mice generate an immune response against the antigen. Office Action at page 5. A declaration under 37 C.F.R § 1.131 of the inventor, Dr. Feng Xu, accompanies this paper. The declaration establishes the Xu reference is not prior art to the present application.

The Xu reference became available online on October 25, 2002. Before October 25, 2002, Dr. Xu prepared *E. coli* and *Shigella* bacteria containing a plasmid that encodes Gag protein. Xu Declaration ¶ 3. The bacteria were killed by heat-treatment then injected into mice. *Id.* ¶ 5. Spleen cells from *E. coli*- and *Shigella*-immunized mice were collected after challenge with a vaccinia virus expressing HIV gag protein. *Id.* ¶ 5. The collected spleen cells were stimulated with HIV Gag p7 protein and responded by producing interferon-γ. *Id.* ¶ 4. Dr. Xu explains that the resulting data "demonstrate that immunization of mice with killed bacterial cells which harbor a plasmid that contains DNA encoding HIV gag causes an immune response directed against the HIV gag." *Id.* ¶ 5. Dr. Xu's declaration establishes that embodiments of the invention were reduced to practice prior to the publication date of the Xu reference. The Xu reference is therefore not prior art to the present application.

With Xu removed as a reference, the rejection relies only on zur Megede, Masschalck, and Raettig, and these references are insufficient to support a *prima facie* case of obviousness. Zur Megede teaches modified HIV gene sequences in plasmids for improved expression, including the use of CMV promoters in the plasmids. Masschalck teaches lyzozyme inactivation of gram-negative bacteria, including *Shigella*. The Raettig abstract teaches heat-inactivation of *Shigella*. Even if combined, the disclosures of these references do not teach or suggest all

[4] Raettig, "An oral enteritis-vaccine composed of twelve heat-inactivated Enterobacteriaceae 3. Communication: studies on efficacy tests in mice protection tests," Zentralbl Bakteriol Mikrobiol Hyg A. 1981 Nov;250(4):511-20, abstract.

elements of independent claims 1 or 8. Thus, neither independent claims 1 and 8 nor their dependent claims are *prima facie* obvious over the cited references.

Please withdraw the rejection.

Rejection of Claims 1-13, 25, 27, 36, and 38 Under 35 U.S.C. § 103(a)

Claims 1-13, 25, 27, 36, and 38 stand rejected as obvious over Xu supported by zur Megede in view of Masschalck and Raettig and further in view of abstracts of Chang[5] and Kruithof.[6] Applicant respectfully traverses the rejection.

As explained above, Xu is not a prior art reference to the pending claims. Neither Chang nor Kruithof cures the deficiencies of the remaining references zur Megede, Masschalck, and Raettig. The Chang abstract teaches killing organisms, including *Shigella*, by UV-treatment. The Kruithof abstract teaches several approaches to killing bacteria, including treatment with ozone, UV, or peroxide, as a means to control bacterial contamination of water. But neither abstract teaches or suggests expressing an immunogen in a mammal by administering a bacterial cell comprising polynucleotides encoding an immunogen, where the bacterial cell cannot use its own machinery to express the encoded immunogen. Even if combined, the disclosures of zur Megede, Masschalck, Raettig, Chang, and Kruithof do not teach or suggest all elements of independent claims 1 or 8. Thus, neither independent claims 1 and 8 nor their dependent claims are *prima facie* obvious over the cited references.

Please withdraw the rejection.

---

[5] Chang *et al.*, "UV inactivation of pathogenic and indicator microorganisms," Appl Environ Microbiol. 1985 Jun;49(6):1361-5, abstract.

[6] Kruithof *et al.*, "UV/H_2O_2-treatment: The ultimate solution for pesticide control and disinfection," Proceedings-Annual Conference, American Water Works assoc. 2000, p331-334, abstract.

Respectfully submitted,

BANNER & WITCOFF, LTD.

/Lisa M. Hemmendinger/

Dated: November 25, 2009 By:_____

Lisa M. Hemmendinger
Registration No. 42,653

Customer No. 22907
(202)-824-3000